

**Claims:**

Amend claims 24-77 as follows:

24. Claim 24 (currently amended): A solid-chemical composition ~~which provides the capacity to extract and absorb hydrophobic chemical contaminants and to promote the biodegradation thereof~~ for the anaerobic bioremediation of chemical contaminants, comprising a dry mixture of:
- a. ~~One~~ one or more plant materials selected from the plant families *Leguminosae* and *Phaeophyta*, comprising from about 20% to 97%, by weight percent, of said composition; and
  - 2 b. ~~One~~ one or more plant materials selected from the plant families *Gossypium* and *Cannabacea*, comprising from about 3% to 80%, by weight percent, of said composition.
25. Claim 25 (currently amended): A chemical composition in accordance with Claim 24, further comprising an ammonium-free source of inorganic nitrogen ~~from about 0.5% to 7.5%, by weight of the composition whereby said ammonium-free source of inorganic nitrogen comprises one or more~~ selected from the group consisting of sodium nitrate, sodium-potassium nitrate, and potassium nitrate.
26. Claim 26 (currently amended): A chemical composition in accordance with Claim 24, further comprising a source of complex, biologically hydrolyzable nutrient phosphorus in an amount of from about 0.25% to 15%, by weight percent, of said composition ~~whereby wherein~~ said source of complex, biologically hydrolyzable nutrient phosphorus ~~comprises one or more~~ is selected from the group consisting of ringed metaphosphates and linear polyphosphates.
27. Claim 27 (canceled): ~~A chemical composition in accordance with Claim 24, whereby said source of complex, biologically hydrolyzable nutrient phosphorus comprises one or more further selected from the group consisting of sodium hexametaphosphate, sodium trimetaphosphate, sodium tripolyphosphate, sodium-potassium tripolyphosphate, and tetrasodium pyrophosphate.~~

28. Claim 28 (currently amended): A chemical composition in accordance with Claim 24, further comprising a source of chelating agents in an amount of from about 0.01% to 5%, by weight percent, of said composition ~~whereby wherein~~ said chelating agents ~~comprise one or more~~ are selected from the group consisting of citric acid, humic acid, fulvic acid, sodium citrate, nitrilotriacetic acid (NTA), and ethylenediaminetetraacetic acid (EDTA).
29. Claim 29 (currently amended): A chemical composition in accordance with Claim 24, further comprising inoculum ~~for containing~~ one or more microorganisms, wherein said inoculum is in an amount of from about 0.001% to 2%, by weight percent, of said composition ~~whereby~~ and said microorganisms are selected from the group consisting of soil bacteria, metal-reducing bacteria, legume-related bacteria, plant-fiber degrading bacteria and plant-fiber degrading fungi.
30. Claim 30 (currently amended): A chemical composition in accordance with Claim 24, further comprising one or more plant materials in an amount of from about 0.5% to 30%, by weight percent, of said composition, wherein said plant materials are selected from the ~~group consisting of the plant~~ families *Triticum* and *Aegilops*.
31. Claim 31 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby wherein~~ said plant materials from the plant family *Leguminosae* ~~comprise one or more further~~ are selected from the group consisting of *Lespedeza* spp., *Medicago* spp., *Vicia* spp., *Glycine* spp., *Lathyrus* spp. and *Trifolium* spp.
32. Claim 32 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby wherein~~ said plant materials from the plant family *Phaeophyta* ~~comprise one or more~~ are further selected from the ~~group consisting of~~ *Sargassum* spp.

33. Claim 33 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby wherein~~ said plant materials from the plant family *Gossypium* are ~~one or more~~ further selected from the group consisting of ~~cotton lint and other fibrous cotton-containing materials produced by the cultivation or processing of cotton, cotton plants and cotton seed~~ cotton seed, cotton plants, cotton lint, and other fibrous cotton-containing materials produced by the cultivation or processing of cotton.
34. Claim 34 (currently amended): A chemical composition in accordance with Claim 24, whereby ~~wherein~~ said plant materials from the plant family *Cannabaceae* are ~~one or more~~ further selected from the group consisting of ~~plant materials from hemp and [or] hops~~ plants.
35. Claim 35 (currently amended): A chemical composition in accordance with Claim 24 ~~29~~, whereby further comprising a source of microorganisms wherein said ~~inoculum for~~ ~~microorganisms comprise one or more further~~ microorganisms are selected from the group consisting of microorganisms associated with "yellow boy" and other biogeochemically produced ferric oxides, hydroxides and oxyhydroxides produced from acid-mine drainage and microorganisms associated with the waste products produced from the treatment of acid-mine drainage wastes or the treatment thereof.
36. Claim 36 (currently amended): A chemical composition in accordance with Claim 29, whereby ~~wherein~~ said microorganisms ~~comprise one or more~~ are further selected from the group consisting of *Rhizobium* spp., *Bradyrhizobium* spp., *Fibrobacter* spp., *Clostridium* spp., *Pseudomonas* spp., *Geobacter* spp. and *Thiobacillus* spp.
37. Claim 37 (currently amended): A chemical composition in accordance with Claim 30, whereby ~~wherein~~ said plant materials of the plant families are ~~one or more~~ selected from the group consisting of wheat, oats, barley, and rye.

38. Claim 38 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
39. Claim 39 (currently amended): A chemical composition in accordance with Claim 30, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
40. Claim 40 (currently amended): A chemical composition in accordance with Claim 31, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
41. Claim 41 (currently amended): A chemical composition in accordance with Claim 32, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
42. Claim 42 (currently amended): A chemical composition in accordance with Claim 33, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
43. Claim 43 (currently amended): A chemical composition in accordance with Claim 34, ~~whereby~~ wherein ~~the forms of~~ said plant materials are ~~one or more~~ in a form selected from the group consisting of powders, flours, pellets, meals, mids, husks, hulls, hays and straws.
44. Claim 44 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.

45. Claim 45 (currently amended): A chemical composition in accordance with Claim 25, ~~whereby~~ wherein the said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
46. Claim 46 (currently amended): A chemical composition in accordance with Claim 26, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
47. Claim 47 (currently amended): A chemical composition in accordance with Claim 27, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
48. Claim 48 (currently amended): A chemical composition in accordance with Claim 28, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
49. Claim 49 (currently amended): A chemical composition in accordance with Claim 29, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
50. Claim 50 (currently amended): A chemical composition in accordance with Claim 30, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
51. Claim 51 (currently amended): A chemical composition in accordance with Claim 31, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
52. Claim 52 (currently amended): A chemical composition in accordance with Claim 32, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.

53. Claim 53 (currently amended): A chemical composition in accordance with Claim 33, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
54. Claim 54 (currently amended): A chemical composition in accordance with Claim 34, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
55. Claim 55 (currently amended): A chemical composition in accordance with Claim 35, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
56. Claim 56 (currently amended): A chemical composition in accordance with Claim 36, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
57. Claim 57 (currently amended): A chemical composition in accordance with Claim 37, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
58. Claim 58 (currently amended): A chemical composition in accordance with Claim 38, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
59. Claim 59 (currently amended): A chemical composition in accordance with Claim 39, whereby wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.

60. Claim 60 (currently amended): A chemical composition in accordance with Claim 40, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
61. Claim 61 (currently amended): A chemical composition in accordance with Claim 41, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
62. Claim 62 (currently amended): A chemical composition in accordance with Claim 42, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
63. Claim 63 (currently amended): A chemical composition in accordance with Claim 43, ~~whereby~~ wherein said composition is prepared as one or more forms selected from the group consisting of granules, briquettes, pellets, tablets, and capsules.
64. Claim 64 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby wherein the forms of said plant materials comprise one or more~~ are in a form selected from the group consisting of dehydrated, dried and freeze-dried forms.
65. Claim 65 (currently amended): A chemical composition in accordance with Claim 29, ~~whereby wherein the forms of said inoculum for microorganisms comprise one or more~~ is in a form selected from the group consisting of dehydrated, dried and freeze-dried forms.

66. Claim 66 (currently amended): A chemical composition in accordance with Claim 24, further comprising a binding agent in an amount of from about 0.1% to 7%, by weight percent, of said composition.
67. Claim 67 (currently amended): A chemical composition in accordance with Claim 66, ~~whereby~~ wherein said binding agent ~~comprises one or more~~ is selected from the group consisting of pre-gelled starch, starch, molasses, barley malt extract, corn syrup, vegetable oils, vegetable fats, animal oils, animal fats, animal lards, glycerin, gelatine, bentonite, montmorillonite, kaolinite, and calcium carbonate.
68. Claim 68 (currently amended): A chemical composition in accordance with Claim 24, ~~whereby~~ wherein said plant materials are cultivated *in-situ* within contaminated environmental media.
69. Claim 69 (currently amended): A chemical composition in accordance with Claim 30, ~~whereby~~ wherein said plant materials are cultivated *in-situ* within contaminated environmental media.
70. Claim 70 (currently amended): A chemical composition in accordance with Claim 31, ~~whereby~~ wherein said plant materials are cultivated *in-situ* within contaminated environmental media.
71. Claim 71 (currently amended): A chemical composition in accordance with Claim 32, ~~whereby~~ wherein said plant materials are cultivated *in-situ* within contaminated environmental media.
72. Claim 72 (currently amended): A chemical composition in accordance with Claim 33, ~~whereby~~ wherein said plant materials are cultivated *in-situ* within contaminated environmental media.



73. Claim 73 (currently amended): A chemical composition in accordance with Claim 34, whereby wherein said plant materials are cultivated *in-situ* within contaminated environmental media.
74. Claim 74 (currently amended): A chemical composition in accordance with Claims 68, 69, 70, 71, 72 or 73, whereby wherein said plant materials which are cultivated *in-situ* are subsequently exposed to one or more periods of freezing temperatures.
75. Claim 75 (currently amended): A chemical composition in accordance with Claim 24, whereby wherein said solid-chemical composition is supplemented with a liquid-chemical composition comprising one or more ingredients selected from the group consisting of nitrates, nitrites, phosphates, surfactants, alcohols, vegetable oils, mineral oils, corn syrup, barley malt extract, molasses, humic acids, fulvic acids and chelating agents.
76. Claim 76 (currently amended): ~~A method for the bioremediation of chemical contaminants in environmental media, whereby said chemical composition in accordance with Claims 24, 25, 26, 27, 28 or 29, is applied at a rate of about 0.1 g to 1000 g per Kg of said contaminated environmental media.~~ A method for bioremediation of hydrophobic chemical contaminants in environmental media comprising:
- a. applying said solid-chemical composition in accordance with Claims 24, 25, 26, 27, 28 or 29 to the contaminated environmental media in an amount of 0.1 g to 1000 g per kg of the contaminated environmental media;
  - b. extracting and absorbing said hydrophobic chemical contaminants from said environmental media; and
  - c. biodegrading said hydrophobic chemical contaminants.

77. Claim 77 (currently amended): ~~A method for the bioremediation of chemical contaminants in environmental media, whereby said chemical composition in accordance with Claim 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, or 63 is applied at a rate of about 0.1 g to 1000 g per Kg of said contaminated environmental media. A method for bioremediation of hydrophobic chemical contaminants in environmental media comprising:~~
- a. applying said solid-chemical composition in accordance with Claims 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, or 63 to the contaminated environmental media in an amount of 0.1 g to 1000 g per kg of the contaminated environmental media;
  - b. extracting and absorbing said hydrophobic chemical contaminants from said environmental media; and
  - c. biodegrading said hydrophobic chemical contaminants.